STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
November 20, 1995	G2-29331		

NAME
Mobbs Water System c/o Ron Thompson

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
510 Madrona Beach Road	Olympia	Washington	98502-9537

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Well (Tag #AAF289)

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	10	6

QUANTITY, TYPE OF USE, PERIOD OF USE

6 Acre-feet per year	Commercial Use (12 businesses)	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL
700 feet North and 615 feet West of the East quarter corner of Section 13.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
SE¼ NE¼	13	18	3W	13	Thurston

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

The area served by Mobbs Water System located within the E½ of the NE¼ of Section 13, T. 18 N., R. 3 W.W.M.

DESCRIPTION OF PROPOSED WORKS

The well is served by a 1-hp pump which fills a 17,000 gallon storage tank. The storage tank feeds to 3 in-line pumps. A 1-hp in-line pump is the main pump that supplies water to the connections, while the two 3 hp pumps operate only during periods of heavy demand or in case of fire. All 3 inline pumps feed to two 80-gallon pressure tanks that pressurize the system before being distributed via a 6-inch water line.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	Completed	September 1, 2012

REPORT

BACKGROUND:

On November 13, 1995, Ron Thompson filed an application to withdraw public ground water from one well. The amount requested was 45 gallons per minute (gpm) for commercial supply for 9 connections, and domestic supply for one residence and a restaurant. The project site is located in the Deschutes River Watershed in Water Resources Inventory Area (WRIA) 13.

Public notice was published. No letters of protest were received.

Based on the provisions of Chapters 90.03 and 90.44 Revised Code of Washington (RCW), I recommend approval of this application.

INVESTIGATION:

In consideration of this application, a field investigation was conducted on July 10, 2002 by Tammy Hall. Other investigations included a review of recorded water rights, registered claims, water well reports, hydrogeologic information of the area, and information submitted with the application.

The project site is located near the southern extent of Eld Inlet on low-bank waterfront property. The project is known as "Mobbs Water System" and currently serves water to three connections at a light industrial business park and three businesses on adjoining properties. Since filing the application, the residence that was served by the water system was replaced by a business. The existing plan is to supply water to a total of 12 connections at full build-out which is expected within 10 years. Surrounding land use is comprised of single family residences, agricultural, and commercial.

The site is located in the McLane Creek subbasin, a portion of WRIA 13, the Deschutes River Watershed. The McLane Creek Subbasin is located in north western Thurston County. McLane Creek occupies a broad valley floor bounded by bedrock highlands, the Black Hills and the Capitol Forest. The creek drains the subbasin and empties into Eld Inlet at its southern extent. The elevations in the subbasin range from over 2,000 feet above mean sea level (msl) to sea level at the mouth of McLane Creek.

Eld Inlet is one of the five inlets that form the southern terminus of Puget Sound. Eld Inlet is located between Totten Inlet, to the west and Budd Inlet, to the east. Eld Inlet is approximately ten miles long and ranges from one mile to ¼ mile in width.

The subject well is located approximately 400 feet from marine water on property with an approximate elevation less than 10 feet above mean sea level (msl). The system consists of a 6-inch diameter well with a completed depth of 100 feet. The well is equipped with a 1 horse-power (hp) pump which feeds to a 17,000 gallon storage tank. The storage tank, required for fire suppression, feeds to 3 in-line pumps. A 1 hp in-line pump supplies water to the connections, while the remaining two 3 hp pumps operate only during periods of high demand or in case of fire. All 3 in-line pumps feed to two 80-gallon pressure tanks that pressurize the system before being distributed via a 6-inch water line.

General Area Hydrogeology

The following geologic/ hydrogeologic information was extracted from a Department of Ecology Memorandum prepared by Tammy Hall, hydrogeologist at Department of Ecology's Southwest Regional Office.

The presented geologic/ hydrogeologic information was compiled from the following references:

- Drost, B.W., Turney, G.L., Dion, N.P., and Jones, M.A., 1999, *Conceptual Model and Numerical Simulation of the Ground-Water-Flow System in the Unconsolidated Sediments of Thurston County, Washington*: US Geological Survey Water Resources Investigations Report 99-4165.

- Drost, B.W., Turney, G.L., Dion, N.P., and Jones, M.A., 1998, *Hydrology and Quality of Ground Water in Northern Thurston County, Washington*: US Geological Survey Water-Resources Investigations Report 92-4109 (revised).

A series of glacial advances and retreats is largely responsible for the resulting landscape in the Puget Sound area. These episodes of glaciation have been marked by layers of unconsolidated deposits more than 2,000 feet deep in some areas of Thurston County. However, unconsolidated deposits in the McLane Creek subbasin may only be as deep as 200 feet. These deposits fill a relatively shallow trough bounded to the east and west by bedrock highlands.

These unconsolidated deposits may be glacial or non-glacial in origin. The non-glacial deposits were left by streams carrying meltwater or by water that was impounded behind the masses of ice. Glacial deposits, described as tills or hardpan, were deposited directly by the glacier, itself.

Glacial aquifers may be composed predominately of sand and (or) gravel, but may also contain relatively thin and discontinuous lenses of clay and (or) silt. In addition, confining layers composed predominately of silt and (or) clay, may also contain local lenses of coarse sand

or gravel. The deposits are referred to as "geohydrologic" units because they were identified using a combination of geologic (primarily grain size and sorting) and hydrologic (hydraulic conductivity and hydraulic continuity) properties.

The Kitsap Formation (Qf) is the geohydrologic unit exposed at the ground surface in the project area. The Kitsap Formation is composed of predominately poorly permeable materials, but thin lenses of sand and gravel can yield relatively small quantities of water suitable for domestic use. It is also effective in retarding the downward percolation of groundwater into the underlying units and has the ability to act as a confining layer to those materials lying below it. Qf is generally between 15 and 75 feet thick.

Underlying the Qf are coarse-grained Salmon Springs Drift, penultimate deposits, and other deposits (Qc). The Qc unit is one of the most widely used aquifers in Northern Thurston County. Groundwater in this unit generally occurs under confined conditions. Where the entire thickness of Qc has been penetrated, it is generally about 30 feet thick.

The oldest geohydrologic unit in the McLane Creek subbasin is bedrock (Tb). Bedrock is described as a poorly permeable base of unconsolidated sediments consisting mostly of claystones, sandstones, and some basalt. This unit is what makes up the bedrock exposed in the Black Hills, the associated highlands in the McLane Creek subbasin. It is also found underlying the Qc deposits on the McLane Creek valley floor.

The general movement of groundwater in the McLane Creek subbasin is from areas of higher head to areas of lower head. Groundwater generally moves toward marine water bodies and to surface drainage channels.

Seawater Intrusion in Thurston County

In general, chloride concentrations in Thurston County are relatively low, although small pockets of seawater intrusion occurs in localized areas. Withdrawals from wells in close proximity to marine water, such as the Mobbs System well, have the potential to be at risk of seawater intrusion. The easiest way to reduce the likelihood of seawater intrusion in areas at potential risk is to keep pumping rates low so a pronounced cone of depression that draws up salt water does not develop. Ecology also recommends that this well be tested annually by the system operator for chlorides so that mitigative measures can be taken if chloride concentrations begin to increase. The Maximum Contaminant Level (MCL) allowed according Federal standards for chloride is 250 milligrams per liter (mg/l).

Hydrologic Analysis

(A well log on file in the data base indicates a well was drilled in 1985 and has a completed depth of 100 feet and is 6 inches in diameter). The well log describes layers of silty gray clay and silty blue clay to 74 feet below ground surface (bgs) followed by a water bearing sand and gravel layer to a depth of 78 feet bgs. The well is bottomed in what the driller described as "blue rock" to the completed depth of the well. The well casing is perforated from 77 to 79 feet bgs. Based on interpretation from Drost and others (1998), this well is likely drawing water from the Qc unit.

Information on the well log indicates the well was tested at 25 gpm with 75 feet of drawdown for the testing period. The static water level (SWL) was recorded at 28 feet. Comparing the SWL to the depth of the water bearing zone implies that the aquifer is likely confined. The approximate surface elevation at the project site is less than 10 feet above mean seal level (msl).

Analytical data summarized in Drost and others for three wells within ½ mile from the Mobbs Water System well lists low concentrations of chloride for samples collected in 1978 and 1989. Concentrations for the wells sampled ranged from 2.1 to 2.6 mg/l chloride. These wells are also drawing water from the Qc aquifer.

Dion and Sumioka in *Seawater Intrusion into Coastal Aquifers in Washington*, 1978 (US Geologic Survey Water-Supply Bulletin 56, 1984) report a nearby well with chloride concentrations near 100 mg/l in 1967 and again in 1978, however, no well depth is given. It is likely that this well is located along another waterfront property that is cross gradient from the Mobbs system and will not likely be affected by withdrawals from the Mobbs well.

Neighboring Water Users

The surrounding area is relatively undeveloped, with residential development located mostly along the shoreline. The following water rights, claims, and well reports are on file with Ecology and may be within a one-mile radius from Mobbs Water System:

- Groundwater Certificate No. G2-09252, issued to N. J. Plamondon in 1968, is the nearest groundwater right to the Mobbs well and is located approximately ½ mile away. Five other certificates have been issued at distances within ½ mile and one mile from the Mobbs Water System. These certificates authorize a combined instantaneous withdrawal of 115 gpm, 42.1 acre-feet (ac-ft) per year. Water is used for commercial - industrial, irrigation, multiple domestic supply, single domestic supply, municipal supply, and stock watering. These certificates have been issued on properties that also line Eld Inlet and are cross gradient from the Mobbs well.

- A total of twenty-four surface water rights have been issued authorizing a combined instantaneous diversion of 26.78 cubic feet per second (cfs) and 94.1 ac-ft per year. Water use is from springs and creeks and is used for domestic, irrigation, and stock watering purposes. One surface water permit has been issued authorizing water use from a spring at an instantaneous amount of 0.02 cfs and 0.5 ac-ft per year. These springs are likely associated with the bluffs that overlook Eld Inlet.

- Two groundwater permits have been issued authorizing a combined instantaneous withdrawal of 4,535 gpm and 5,401 ac-ft per year. The largest withdrawal is by the City of Olympia (2-25631). Both of these withdrawals are associated with the upland areas adjacent to the McLane Creek drainage and draw water from aquifers not connected to the Mobbs well system aquifer.

- Ecology's records show approximately 77 groundwater and surface water claims may be located within a one mile radius. Ecology's well log data base also lists approximately 18 wells within a mile of the Mobbs System well. Most of these wells are scattered along the shoreline.

Withdrawals from the Mobbs System well are not expected to impair other water users in the area. Wells in the area are located on properties also bounded by marine water and also intercept groundwater that discharges to marine water.

To protect the applicant and other water users, Ecology recommends regular water testing on an annual basis to detect any significant increase in chloride concentrations. Ecology recommends sampling this well for chloride in August of each year. If pumping the well causes chloride

concentrations to exceed 100 mg/l, immediate action shall be required to prevent them from increasing, such as reducing the instantaneous withdrawal rate (gpm) of the well. This information shall be submitted to Ecology by January 31 of each year.

Effects to Surface Water

The subject well is completed in an aquifer approximately 70 feet below msl. The Mobbs Water System well intercepts water that would otherwise discharge to Eld Inlet. Groundwater intercepted by the Mobbs Water System well is not expected to affect flow in surface waters within the McLane Creek subbasin of the Deschutes River watershed.

Water Demand

The water demand for 12 commercial businesses should not exceed 0.5 ac-ft per year per connection, or a total of 6 ac-ft per year. Currently the Washington State Department of Health Division of Drinking Water has permitted this well for a withdrawal rate of 10 gpm.

FINDINGS AND CONCLUSIONS:

- Based on the hydrogeology of the area, the well's completed depth, and the proximity of the well to Eld Inlet, this well is drawing water from an aquifer directly discharging to marine water. As such, this withdrawal will not impair surface water flows in the Deschutes River Watershed.
- The water will be put to beneficial use for commercial use and single domestic supply.
- The issuance of this water right will not be detrimental or impair any senior water right holders.

RECOMMENDATIONS:

Based on the provisions of 90.03 and 90.44, I find that water is available for appropriation from the source in question and that the appropriation would not impair existing rights. I recommend the issuance of a water right permit in the amount of 10 gpm and 6 acre-feet per year. The time of use is year-round as needed.

PROVISIONS:

The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Office of Water Supply, Department of Health, 1112 SE Quince Street, PO Box 47890, Olympia, Washington 98504-7890, prior to any new construction or alterations of a public water supply system.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC.

Water use data shall be recorded monthly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to Ecology by January 31st of each calendar year.

The following information shall be included with each submittal of water use data: owner, contact name if different, mailing address, daytime phone number, WRIA, Permit/Certificate/Claim No., source name, annual quantity used including units, maximum rate of diversion including units,

1. monthly meter readings including units,
2. peak monthly flow including units,
3. Department of Health WFI water system number and source number(s),
4. purpose of use,
5. fish screen status,
6. well tag number,
7. open channel flow or pressurized diversion,
8. other

and period of use. In the future, Ecology may require additional parameters to be reported or more frequent reporting. Ecology prefers web based data entry, but does accept hard copies. Ecology will provide forms and electronic data entry information.

Chapter 173-173 WAC describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".

Installation and maintenance of an access port as described in Chapter 173-160 is required. An air line and gauge may be installed in addition to the access port.

The subject well has been tagged with a well identification number. This unique well number shall remain attached to the well, please reference this number when submitting data.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

The applicant is advised that notice of Proof of Appropriation of water (under which the final certificate of water right is issued) should not be filed until the permanent distribution system has been constructed and that quantity of water allocated by the permit to the extent water is required, has been put to full beneficial use.

Ecology recommends sampling this well for chloride concentration in August of each year. If pumping the well causes chloride concentrations to exceed 100 mg/l, immediate action shall be required to prevent concentrations from increasing, such as reducing the instantaneous withdrawal rate (gpm) of the well. This information shall be submitted to Ecology by January 31 of each year.

Report Continued

The Water Resources Act of 1971, Chapter 90.54 RCW specifies certain criteria regarding utilization and management of the waters of the State in the best public interest. Favorable consideration of this application has been based on sufficient waters available, at least during portions of the year. However, it is pointed out to the applicant that this use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

In order to help protect your water right from potential future impairment by junior water users, it is important that a record be established of accurate water-level measurements for your well. As such, it is recommended that you measure and record the water level in your well quarterly, using a consistent methodology. This information will be most useful if these measurements are taken after your well has returned to a static (recovered aquifer) condition. In the absence of this, then next best option is to maintain consistency regarding the length of the pumping and recovery period prior to each measurement. For maximum usefulness, data collected should include the following elements:

1. Unique Well ID Number (if available)
2. Description of the measuring point (top of casing, sounding tube, etc.)
3. Measuring point elevation above or below land surface to the nearest 0.1 foot
4. Land surface elevation at the well head to the nearest foot
5. Measurement date and time
6. Measurement method (air line, electric tape, pressure transducer, etc.)
7. Well status (pumping, recently pumped, etc.)
8. Water level accuracy (to nearest foot, tenth of foot, etc.)
9. Depth to static water level below measuring point to the nearest 0.1 foot.

The first four items listed should remain constant from one measurement to the next.

Issuance of this water right may be subject to implementation of the minimum requirements established in the Conservation Planning Requirements, Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs, July 1994, and as revised.

Under RCW 90.03.005 and 90.54.020(6), conservation and improved water use efficiency must be emphasized in the management of the State's water resources, and must be considered as a potential new source of water. Accordingly, as part of the terms of this water right, the applicant shall prepare and implement a water conservation plan approved by Department of Health. The standards for such a plan may be obtained from either the Department of Health or the Department of Ecology.

REPORTED BY: _____ Date: December 12, 2002

The statutory permit fee for this application is $20.00.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Ground Water Application Number G2-29331, subject to existing rights and indicated provisions, to allow appropriation of public ground water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this 12th day of December, 2002.

J. Mike Harris
Water Resources Supervisor
Southwest Regional Office